Methodology to Project the Numbers of Residents in Each Municipality Educated at Public Expense

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These calculations project the numbers of residents in every town educated at public expense for the years 2003 through 2017. The calculations derive the projections of those educated at public expense from projections of the school age population of Maine. (See workbook ResidentPupils1.xls .) The category residents educated at public expense is not the same as public school students. This is because some pupils educated at public expense (about 5,000 at the high school level) attend private, not public schools. Also, not everyone of school age is educated at public expense. Some are home schooled and some attend parochial and private schools at their parents' expense.

The projections are divided into three grade levels. The elementary grade level consists of age four programs, pre-kindergarten, kindergarten, transitional grade one and grades one through five. The middle school level consists of grades six through eight. The high school grade level consists of grades nine through twelve. Special education students are included. The number of special education pupils in high school is added to the number enrolled in grades nine through twelve. The number enrolled in special education below grade nine is divided proportionally between the elementary and middle school levels according to the comparative numbers of regular students in the two grade levels.

The projections of the statewide school age population were similarly divided into three ranges. Children ages four to ten were designated as the population potentially eligible for education at public expense at the elementary grade level. The population ages eleven to thirteen was designated as potentially eligible for education at public expense at the middle school level. The population ages fourteen through seventeen was designated as potentially eligible for education at the high school level.

The number of residents educated at public expense in a town is largely, (but not wholly) dependent on the number of school age residents. However, we do not have estimates of the school age populations of towns between decennial censes. These projections, therefore, are based on the ratio of the number of residents educated at public expense in every town in 1990, 2000, 2001 and 2002 to the statewide school age population each of those years. Abbot, for example, had 65 residents educated at public expense at the elementary level in 1990 while statewide there were 122,722 persons of elementary level age (ages four to ten). The 1990 ratio of Abbot residents educated at public expense at the elementary level to the statewide elementary age population therefore was 65 divided by 122,722 which yields a ratio of 0.000530.

The next step averaged the annual rates of change in the ratios for the periods from 1990 to 2000, from 2000 to 2001 and from 2001 to 2002. This average rate of change was then assumed to continue from 2002 to 2017. In Abbot, the average rate of change at the elementary level was +0.0000079. In 2002, the ratio of Abbot residents educated at public expense at the elementary grade level was 0.000336. The projected ratio for 2003, therefore, was 0.0003439 - - the 2002 ratio (0.000336) plus the average rate of change (+0.0000079). The projected ratio for 2004 was

0.0003518 - - the projected 2003 ratio (0.0003439) plus the average rate of change (+0.0000079) and so on. A town with a rate of change in its ratios near zero is one whose growth or decline in the number of residents educated at public expense has been paralleling the growth or decline of the statewide school age population. A town with a large positive or negative change in its ratio is one which the number of residents educated at public expense is growing substantially faster or slower than the statewide school age population.

The procedure described in the last paragraph yielded ratios that increased year-by-year markedly beyond those in the recent past. Indeed, statewide, the ratios sometimes summed to more than 1.00 in the out years– something that can't happen. If it could, it would mean that the number of residents of the state educated at public expense was exceeding the statewide population of school age residents. In 2002, the statewide sum of the town ratios at the elementary grade level was 0.87. This can be interpreted to mean that, statewide, there were 87 residents educated at public expense at the elementary grade level for every 100 children of elementary grade age (ages four to ten). To correct for what appear to be unrealistically high ratios in the out years, therefore, the town ratios each year were multiplied by a constant that kept the statewide sum at 0.87. Similar multipliers were used to correct the middle and high school ratios.